DOCUMENT RESUME

ED 102 389 CE 003 114

TITLE	Private and Commercial Pilot: Ligher-Than-Air Airship. Flight Test Guide. (Part 61 Revised).
INSTITUTION	Federal Aviation Administration (DOT), Washington, D.C. Flight Standards Service.
REPORT NO	AC-61-63
PUB DATE	74
NOTE	50p.
EDRS PRICE	MF-$0.76 HC-$1.95 PLUS POSTAGE
DESCRIPTORS	*Aircraft Pilots; *Certification; Federal Legislation; Standards; *Study Guides
IDENTIFIERS	Airplanes; *Airships; Dirigibles

ABSTRACT

The flight test guide assists the applicant and his instructor in preparing for the flight test for the Private or Commercial Pilot Certificate with a Lighter-Than-Air Category and Airship Class Rating under Part 61 (revised) of Federal Aviation Regulations. It contains information and guidance concerning pilot operations, procedures, and maneuvers relevant to the flight test required for those certificates. They are: preflight operations; ground operation; takeoffs and landings; straight-and-level flight, climbs, descents, and turns; precision flight maneuvers; navigation; emergency operations; maneuvering by reference to instruments (commercial); preparing and filing IFR (Instrument Flight Rules) flight plans and complying with IFR clearances (commercial); IFR radio navigation (commercial); instrument approaches (commercial); and emergencies IFR (commercial). A suggested flight test checklist is included listing items concerning the acceptability of the airship, items of personal equipment, and necessary personal records. (AG)

ED102389

AC 61-63

FLIGHT TEST GUIDE

(PART 61 REVISED)

4 NOV
Copy 1974

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

PRIVATE and COMMERCIAL PILOT

Lighter-Than-Air Airship

CE 003114

1974

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

AC 61-63

FLIGHT TEST GUIDE

[Part 61 Revised]

PRIVATE AND COMMERCIAL PILOT

Lighter-Than-Air Airship

1974

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Flight Standards Service

3

PREFACE

Part 61 (revised) of Federal Aviation Regulations, effective November 1, 1973, establishes a new concept of pilot training and certification requirements. To provide a transition to these revised requirements, Part 61 (revised) permits the applicant, for a period of 1 year after the effective date, to meet either the previous requirements or those contained in the revised part. The previous requirements for the Private Pilot Certificate and the Commercial Pilot Certificate are outlined in Part 61, prior to November 1, 1973.

This flight test guide, AC 61-63, has been prepared by Flight Standards Service of the Federal Aviation Administration to assist the applicant and his instructor in preparing for the flight test for the Private or Commercial Pilot Certificate with a Lighter-Than-Air Category and Airship Class Rating under Part 61 (revised). It contains information and guidance concerning the pilot operations, procedures, and maneuvers relevant to the flight test required for those certificates. A suggested flight test checklist is included for

the convenience of those who may find such a checklist useful.

In addition to providing help to the applicant and his instructor, this guide will be useful to FAA inspectors and designated pilot examiners in the conduct and standardization of flight tests. Persons using this guide in connection with airship pilot training and flight tests should also refer to the applicable *Federal Aviation Regulations; Airman's Information Manual;* pertinent advisory circulars; and training publications recommended by the manufacturer of the airship used.

Comments regarding this guide may be directed to the U.S. Department of Transportation, Federal Aviation Administration, Flight Standards Technical Division, P.O. Box 25082, Oklahoma City, Oklahoma 73125.

CONTENTS

	Page
Preface	i
Applicants' Flight Test Checklist	vii
General Information	1
Pilot Operations	9
I. PREFLIGHT OPERATIONS	
A. Certificates and Documents	9
B. Airship Performance and Limitations	9
C. Airship Car Loading and Heaviness Limitations	10
D. Weather Information	10
E. Line Inspection	11
F. Airship Servicing	11
G. Engines and Systems Preflight Check	12
II. GROUND OPERATIONS	
A. Ground Handling	13
B. Mooring	14
C. Rigging (Private)	14
III. TAKEOFFS AND LANDINGS	
A. Upship Takeoffs	15
B. Wheel Takeoffs	16
C. Landings	16
D. Use of Two-Way Radio	17

6

Page

IV. STRAIGHT-AND-LEVEL FLIGHT, CLIMBS, DESCENTS AND TURNS

A. Straight-And-Level Flight -- 18
B. Climbs and Descents ------- 18
C. Turns ---------- 19

V. PRECISION FLIGHT MANEUVERS

A. Rectangular Course --------- 20
B. Turns About a Point ------- 21
C. Eights Around Pylons ------ 21

VI. NAVIGATION

A. Flight Planning ---------- 22
B. Conduct of Planned Flight -- 23
C. Diversion to an Alternate --- 24

VII. EMERGENCY OPERATIONS

A. Partial or Complete Loss of Power ---------- 25
B. Free Ballooning ---------- 25
C. Emergency Use of Ripcord -- 26
D. Systems or Equipment Malfunctions ---------- 27

VIII. MANEUVERING BY REFERENCE TO INSTRUMENTS (COMMERCIAL)

A. Straight-And-Level Flight -- 28
B. Turns ---------- 28
C. Climbs and Descents ------- 29
D. Precision Turns ---------- 29

Page

IX. PREPARING AND FILING IFR FLIGHT PLANS, AND COMPLYING WITH IFR CLEARANCES (COMMERCIAL)

A. Preparing and Filing an Instrument Flight Plan 30
B. Complying with IFR Clearances 31

X. IFR RADIO NAVIGATION (COMMERCIAL)

A. VOR Navigation 32
B. ADF Navigation 32
C. Navigation by ATC Instructions 32

XI. INSTRUMENT APPROACHES (COMMERCIAL)

A. VOR Approach 33
B. ILS Approach 34
C. Localizer Approach 35
D. ADF Approach 36

XII. EMERGENCIES IFR (COMMERCIAL)

A. Loss of Radio Communications 37
B. ASR (Airport Surveillance Radar) Approach 37
C. Recovery From Unusual Attitudes 38

Page

D. Equipment or Instrument Malfunctions ---------- 39
E. Missed Approach Procedures 39

APPLICANT'S FLIGHT TEST CHECKLIST
(Suggested)

APPOINTMENT WITH INSPECTOR OR EXAMINER: Name _____

Time/Date _____

ACCEPTABLE AIRSHIP

- ☐ Aircraft Documents:
  - Airworthiness Certificate
  - Registration Certificate
  - Operating Limitations
- ☐ Aircraft Maintenance Records:
  - Airworthiness Inspections
- ☐ FCC Station License
- ☐ View-Limiting Device (Commercial)

PERSONAL EQUIPMENT

- ☐ Current Charts
- ☐ Computer and Plotter
- ☐ Flight Plan Form
- ☐ Flight Logs
- ☐ Current AIM

PERSONAL RECORDS

- ☐ Pilot Certificate
- ☐ Medical Certificate
- ☐ Signed Recommendation
- ☐ Written Test Results
- ☐ Logbook
- ☐ Notice of Disapproval (if applicable)
- ☐ Approved School Graduation Certificate (if applicable)
- ☐ FCC Radiotelephone Operator Permit
- ☐ Examiner's Fee (if applicable)

GENERAL INFORMATION

PILOT TRAINING AND CERTIFICATION CONCEPT

Part 61 of the Federal Aviation Regulations has been revised and upgraded to reflect the complexity of the modern aircraft as well as its operating environment. In the past, airman certification requirements could be met by training a student to pass a written test and then to demonstrate his ability to perform predetermined flight training maneuvers during a flight test. Rather than merely duplicating on the flight test the maneuvers used for training, the new training and certification concept requires that the applicant receive instruction in and demonstrate his competency in *all pilot operations* listed in pertinent sections of FAR Part 61 (revised). A pilot operation, as used herein, is a group of related procedures and maneuvers involving skills and knowledge required to safely and efficiently function as a pilot. The specific procedures and maneuvers used to teach the pilot operations are not listed in FAR Part 61 (revised). Instead, the instructor is permitted to select procedures and maneuvers from industry-approved training publications pertinent to the certificate or rating sought.

The instructor indicates by logbook endorsement that the applicant has demonstrated competency in all the required pilot operations and considers him qualified to pass the flight test. On the flight test, the examiner[1] selects the procedures and maneuvers to be performed by the applicant to show competency in each required pilot operation.

---

[1] The word "examiner" is used hereafter in this guide to denote either the Federal Aviation Administration Inspector or designated pilot examiner who conducts an official flight test.

USE OF THIS GUIDE

The pilot operations in this flight test guide, indicated by Roman numerals, are required by Part 61 (revised)—§ 61.107 for the private pilot and § 61.127 for the commercial pilot. This guide is intended only to outline appropriate pilot operations and the minimum standards for the performance of each procedure or maneuver which will be accepted by the examiner as evidence of the pilot's competency. It is not intended that the applicant be tested on every procedure or maneuver within each pilot operation, but only those considered necessary by the examiner to determine competency in each pilot operation. Where appropriate, certain procedures or maneuvers may be evaluated separately or in combination with other procedures or maneuvers. Certain procedures and maneuvers, pertinent *only* to the private or commercial applicant, are so indicated. Procedures and maneuvers not so indicated apply to both applicants.

When, in the judgment of the examiner, certain demonstrations are impractical, competency may be determined by oral testing.

This guide contains an **Objective** for each required pilot operation. Under each pilot operation, pertinent procedures or maneuvers are listed with ***Descriptions*** and ***Acceptable***

Performance Guidelines.

1. The ***Objective*** states briefly the purpose of each pilot operation required on the flight test.

2. The ***Description*** provides information on what may be asked of the applicant regarding the selected procedure or maneuver. The procedures or maneuvers listed have been found most effective in demonstrating the objective of that particular pilot operation.

3. The ***Acceptable Performance Guidelines*** include the factors which will be taken into account by the examiner in deciding whether the applicant has met the objective of the pilot operation. The airspeed, altitude, and heading tolerances given represent the minimum performance expected in good flying conditions. However, consistently exceeding these tolerances before corrective action is initiated is indicative of an unsatisfactory performance. Any procedure or action, or the lack thereof, which requires the intervention of the examiner to maintain safe flight will be disqualifying.

Emphasis will be placed on procedures, knowledge, and maneuvers which are most critical to a safe performance as an airship pilot. During the entire flight test, evaluation of the applicant's performance will be based primarily on his use of good operating practices and sound judgment in avoiding critical situations.

GENERAL PROCEDURES FOR FLIGHT TESTS

The ability of an applicant for a private or commercial pilot certificate, or for an aircraft rating on that certificate, to perform the required pilot operations is based on the following:

1. Performing procedures and maneuvers within the airship's performance capabilities and limitations, including use of the airship's systems.
2. Performing emergency procedures and maneuvers appropriate to the airship.
3. Piloting the airship with smoothness and accuracy.
4. Exercising judgment.
5. Applying his aeronautical knowledge.
6. Showing that he is the master of the airship, with the successful outcome of a procedure or maneuver never seriously in doubt.

If the applicant fails any of the required pilot operations he fails the flight test. The examiner or the applicant may discontinue the test at any time when the failure of a required pilot operation makes the applicant ineligible for the certificate or rating sought. If the test is discontinued, the applicant is entitled to credit for only those entire pilot operations that he has successfully performed.

FLIGHT TEST PREREQUISITES

An applicant for the airship pilot flight test is required by revised § 61.39 of the Federal Aviation Regulations to have: (1) passed the appropriate airship pilot written test within 24 months before the date he takes the flight test, (2) the applicable instruction and aeronautical experience prescribed for the pilot certificate he seeks, (3) at least a second class medical certificate issued within the past 12 months for a commercial or at least a third class medical certificate issued within the past 24 months for a private, (4) reached at least 17 years of age for a private or 18 years for a commercial, and (5) a written statement from a certificated commercial pilot with a Lighter-Than-Air Airship Class Rating certifying that he has given the applicant flight instruction in preparation for the flight test within 60 days preceding the date of application, and finds him competent to pass the test and to have a satisfactory knowledge of the subject areas in which he is shown to be deficient by his Airman Written Test Report.

AIRSHIP AND EQUIPMENT REQUIREMENTS FOR FLIGHT TEST

The applicant is required by revised § 61.45 to provide an airworthy airship for the flight test. This airship must be capable of, and its operating limitations must not prohibit, the performance of the pilot operations re-

quired on the flight test. The following equipment is relevant to the pilot operations required by revised § 61.107 for the private pilot flight test, and by revised § 61.127 for the commercial pilot flight test:

[NOTE: *Items 4 and 5 are applicable to commercial pilot flight test only.*]

1. Two-way radio suitable for voice communications with aeronautical ground stations.
2. A radio receiver which can be utilized for available radio navigation facilities (may be the same radio used for communications).
3. Operating instructions and limitations. The applicant should have an appropriate checklist, an Owner's Manual/Handbook, or, if required by the airship used, an FAA-approved Airship Flight Manual. Any manufacturer's published recommendations[2] or operating limitations that are applicable to the specific airship will be observed.

---

[2] The phrase "manufacturer's published recommendations" is used hereafter in this guide to denote FAA-approved Airship Flight Manual material when such material has been approved for the airship type or other manufacturer's published recommendations such as "Owner's Manual," "Owner's Handbook," "Bulletins," and "letters" for the safe operation of the airship model or series, in the absence of an approved Airship Flight Manual.

4. Appropriate flight instruments for the control of the airship during instrument conditions. Appropriate flight instruments are considered to be those required by FAR Part 91, for flight under instrument flight rules.
5. A suitable view-limiting device, easy to install and remove in flight, for simulating instrument flight conditions.

PILOT OPERATIONS
Procedures/Maneuvers

I. PREFLIGHT OPERATIONS

Objective

To determine that the applicant can ensure that he meets pilot requirements, that the airship is airworthy and ready for safe flight, and that suitable weather conditions exist.

Procedures/Maneuvers

A. Certificates and Documents

1. Description The applicant may be asked to present his pilot and medical certificates and to locate and explain the airship's registration certificate, airworthiness certificate, operating manual or FAA-approved Airship Flight Manual (if required) and equipment list. In addition, he is expected to be able to explain the airship and engine logbooks or other maintenance records.

2. Acceptable Performance Guidelines The applicant shall be knowledgeable regarding the location, purpose, and significance of each required item.

B. Airship Performance and Limitations

1. Description The applicant may be orally quizzed on the performance capabili-

ties, approved operating procedures, and limitations of the airship used. This includes power settings, placarded speeds, and fuel and oil requirements. In addition, the manufacturer's published recommendations or FAA-approved Airship Flight Manual should be used to determine the effects of temperature, pressure altitude, wind, and car weight on performance.

2. Acceptable Performance Guidelines The applicant shall be evaluated on his ability to obtain, explain, and apply the information which is essential in determining the performance capabilities and limitations of the airship used.

C. Airship Car Loading and Heaviness Limitations

1. Description The applicant may be asked to demonstrate the application of the approved data for the airship used to determine airship car loading and heaviness limitations for takeoff and landing.

2. Acceptable Performance Guidelines The applicant shall determine loads and load distribution in relation to unit lift, car heaviness and frame distribution, and shall make necessary load adjustments to remain within limits.

D. Weather Information

1. Description The applicant may be asked to obtain Aviation Weather Reports, Area and Terminal Forecasts, and Winds

Aloft Forecasts pertinent to the proposed flight.

2. Acceptable Performance Guidelines The applicant shall demonstrate that he knows what weather information is pertinent (particularly wind conditions) and how to best obtain this information, and that he can interpret and understand its significance with respect to his proposed flight.

E. Line Inspection

1. Description The applicant may be asked to demonstrate a visual inspection to determine the airship's airworthiness and readiness for flight. This includes all required equipment and documents. A checklist provided by the manufacturer or operator should be used.

2. Acceptable Performance Guidelines The applicant shall use an orderly procedure in conducting a preflight inspection of the airship. He shall know the significance of each item checked and recognize any unsafe condition.

F. Airship Servicing

1. Description The applicant may be asked to demonstrate a visual check to determine that the fuel is of the proper grade and type and the supply of fuel and oil is adequate for the proposed flight. He should take appropriate action to eliminate possible fuel contamination in the airship.

2. *Acceptable Performance Guidelines* The applicant shall know the grade and type of oil and fuel specified for the airship and be able to determine the amount of fuel required to complete the flight. He shall know where to find all fuel and oil fillers, and the capacity of each tank, as well as the location of the battery. He shall also know the proper steps for avoiding fuel contamination during and following servicing.

G. Engines and Systems Preflight Check

1. Description The applicant may be asked to demonstrate a check to determine that the engines are operating within acceptable limits and that all systems, equipment, and controls are functioning properly and adjusted for takeoff. A checklist provided by the manufacturer or operator should be used.

2. *Acceptable Performance Guidelines* The applicant shall use proper procedures in engine starting and runup and in checking airship systems, equipment, and controls to determine that the airship is ready for flight. Careless operation in close proximity to obstructions, ground personnel, or other aircraft shall be disqualifying.

II. GROUND OPERATIONS

Objective

To determine that the applicant can coordinate flight and ground crew activities for safe

and efficient control of the airship during all ground operations.

Procedures/Maneuvers

A. Ground Handling

1. Description The applicant may be asked to demonstrate the ground handling of the airship by stabilizing it in a position or maneuvering (flying) it on the surface under its own power, or while in the hands of the ground crew or by the combined efforts of the pilot and ground crew. The ground operations should be conducted under the direct control or supervision of the applicant and he will be expected to: (1) determine that the airship's movement on the surface is clear of obstructions; (2) comply with local airport rules and tower instructions; (3) trim the airship to ensure maximum controllability while in the hands of the ground crew; (4) maneuver the airship on the surface in a safe manner demonstrating adequate knowledge of ballasting and trimming procedures, pressure control, and correct use of controls and engines. In addition the applicant may be asked to demonstrate, and respond to, the hand signals used for communication with the ground crew chief.

2. Acceptable Performance Guidelines The applicant shall demonstrate safe operations of the airship on the surface. He shall know the purpose and responsibilities of each member of the ground crew. Consid-

eration shall be given to the (1) safety of the ground handling crew and equipment; (2) proper use of the throttles to prevent the airship from drifting astern or ahead; (3) careful attention to ballasting to make certain that the airship does not become too light or heavy for existing conditions; (4) maintenance of adequate envelope pressure; and (5) alertness for and proper response to signals from the crew chief.

B. Mooring

1. Description The applicant may be asked to describe or perform a recommended method of securing the airship in position.

2. Acceptable Performance Guidelines The applicant shall be evaluated on his knowledge of or his competence in performing mooring procedures. He shall take the necessary basic preliminary steps to ensure that mooring arrangements will be suitable, adequate, and compatible with any other flight activity. He shall also be evaluated on his judgment of weather conditions, choice of mooring method (mast), site selection, any requirements for mast erection, and the proper use of basic and special equipment associated with the mooring process.

C. Rigging (Private)

1. Description The applicant may be orally quizzed on the manufacturer's approved rigging procedures including (1) layout of the envelope and car; (2) checking the bal-

lonets for leaks; (3) checking the envelope for leaks, correct internal suspension system installation, correct rip panel and ripcord installation; (4) envelope inflation; and (5) attaching the airship car.

2. *Acceptable Performance Guidelines* The applicant's performance shall be evaluated on his ability to explain the rigging procedures for the airship used.

III. TAKEOFFS AND LANDINGS

Objective

To determine that the applicant can accomplish safe takeoffs and landings under all normally anticipated conditions.

Procedures/Maneuvers

A. Upship Takeoff—Static Lift (Equilibrium), Negative Lift (Heavy), and Positive Lift (Light)

1. *Description* The applicant may be asked to demonstrate an upship takeoff with the airship ballasted heavy, light, or in equilibrium. This maneuver includes proper control and trim of the airship while in the hands of the ground handling crew during weigh-offs, pre-takeoff checks, and takeoffs.

2. *Acceptable Performance Guidelines* The applicant's performance shall be evaluated on his planning, judgment, ballasting and trimming technique, power applica-

tion, direction and attitude control, smoothness, coordination, and communication and cooperation with the ground handling crew. Exceeding the car weight limitations or any action that creates a hazard to personnel or equipment shall be disqualifying.

B. Wheel Takeoff

1. Description The applicant may be asked to demonstrate a wheel takeoff with the airship ballasted heavy. This maneuver includes proper control and trim of the airship while in the hands of the ground handling crew during weigh-offs, pre-takeoff checks, and takeoffs.

2. Acceptable Performance Guidelines The applicant's performance shall be evaluated on his planning, judgment, ballasting and trimming technique, power application, direction and attitude control, smoothness, coordination, and communication and cooperation with the ground handling crew. Exceeding the car weight limitations or any action that creates a hazard to personnel or equipment shall be disqualifying.

C. Landing – Static Lift (Equilibrium), Negative Lift (Heavy), and Positive Lift (Light)

1. Description The applicant may be asked to demonstrate a landing with the airship ballasted heavy, light, or in equilibrium. This maneuver includes a static weigh-off and trimming of the airship prior to starting the

approach. Altitude and airspeed should be controlled to fly the airship into the hands of the ground handling crew with minimum forward speed.

2. *Acceptable Performance Guidelines* The applicant's performance shall be evaluated on his planning, judgment, ballasting and trimming technique, power application, direction and attitude control, smoothness, coordination and communication and cooperation with the ground handling crew. Exceeding the car weight limitations or any action that creates a hazard to personnel or equipment shall be disqualifying.

D. Use of Two-Way Radio

1. Description The applicant may be asked to demonstrate the use of designated frequencies and recommended voice procedures to report position and state intentions regarding flight, and to obtain pertinent information and clearances. Where applicable, he will be expected to use Airport Terminal Information Service, Airport Advisory Service, Control Tower, Approach and Departure Control, and UNICOM.

2. *Acceptable Performance Guidelines* The applicant shall determine the type of communication facilities available, select correct frequencies, and use appropriate communications procedures to obtain and acknowledge necessary information. Failing to comply with airport traffic procedures or in-

structions without permission to do so shall be disqualifying.

IV. STRAIGHT-AND-LEVEL FLIGHT, CLIMBS, DESCENTS, AND TURNS

Objective

To determine that the applicant can competently maneuver the airship while dividing his attention using instruments and outside visual references.

Procedures/Maneuvers

A. Straight-And-Level Flight

1. Description The applicant may be asked to maintain selected altitudes, headings, and airspeeds using outside references and flight instruments.

2. Acceptable Performance Guidelines The applicant's performance shall be evaluated on his ability to (1) maintain altitude and heading with a minimum of pitching and yawing; (2) adjust and maintain the trim of the airship for maximum controllability; and (3) use the controls in a smooth, well-coordinated manner. Deviation of ± 100 ft. from the selected altitude shall be considered disqualifying unless corrected promptly.

B. Climbs and Descents

1. Description The applicant may be asked to ascend to, and descend to selected altitudes at predetermined rates.

2. *Acceptable Performance Guidelines* The applicant's performance shall be evaluated on his (1) ability to have the airship in static equilibrium or nearly so, when practicable; (2) understanding of the air system and its limitations for trimming procedure, coordination, and smooth change in the airship's attitude; (3) ability to control rate of ascent or descent within reasonable limits; (4) awareness of the necessity for adequate pressure control and the effect static trim has on controllability; (5) ability to control gas pressure within acceptable inches of water; and (6) ability to return the airship to straight-and-level flight at the selected altitude.

C. Turns

1. Description The applicant may be asked to demonstrate turns to the left and to the right. The turns should be made at cruising speed with approximately minimum turning radius and while maintaining the selected altitude within reasonable limits.

2. *Acceptable Performance Guidelines* The applicant's performance shall be evaluated on his (1) coordination; (2) alertness; (3) rudder technique in controlling the constantly changing drift angle; and (4) ability to anticipate the need for elevator control to counteract the elevator effect produced by the rudder while turning.

V. PRECISION FLIGHT MANEUVERS

Objective

To determine that the applicant is able to maneuver the airship at a constant altitude over a predetermined ground path in varying wind conditions, while dividing his attention inside and outside the airship.

Procedures/Maneuvers

A. Rectangular Course

1. Description The applicant may be asked to follow a rectangular or square course around and outside of a selected area. He is expected to correct for wind drift so the ground track is parallel to the sides of the selected area and equidistant from each side. He should perform the maneuver both to the right and to the left, maintaining a constant altitude.

2. Acceptable Performance Guidelines The applicant shall readily select the ground reference and maintain the desired track in relation to that reference. Properly coordinated turns, smooth control usage, and division of attention shall be required. Deviation of ± 100 ft. from the selected altitude shall be considered disqualifying unless corrected promptly. Also, excessive maneuvering to correct for wind drift, flight below minimum safe altitude prescribed by regulations, or failure to observe other aircraft shall be disqualifying.

B. Turns About A Point

1. Description The applicant may be asked to perform a ground track maneuver in which a constant radius of turn is maintained. He should apply necessary rudder correction to compensate for the continually changing drift angle, so as to circle and maintain a uniform distance from a prominent reference point on the ground. He should perform the maneuver both to the right and to the left, maintaining a constant altitude.

2. Acceptable Performance Guidelines The applicant shall maneuver the airship so that the ground track is a constant distance from the reference point. Performance shall be evaluated on the basis of proper wind drift correction, airspeed control, coordination, altitude control, and vigilance for other aircraft. Deviation of ± 100 ft. from the selected altitude shall be considered disqualifying unless corrected promptly. Also, flight below minimum safe altitude prescribed by regulations, or failure to observe other aircraft shall be disqualifying.

C. Eights Around Pylons

1. Description The applicant may be requested to perform right and left turns around two ground reference points or pylons. A turn should be made in each direction, applying necessary rudder correction to compensate for the continually changing drift

angle, so as to circle and maintain a uniform distance from the pylons. The ground track should be in the form of a figure "8".

2. *Acceptable Performance Guidelines* The applicant shall maneuver the airship so that both loops of the "8" are of equal size. Performance shall be evaluated on proper wind drift correction, airspeed control, coordination, altitude control and vigilance for other aircraft. Deviation of ± 100 ft. from the selected altitude shall be considered disqualifying unless corrected promptly. Also, flight below minimum safe altitude prescribed by regulations, or failure to observe other aircraft shall be disqualifying.

VI. NAVIGATION

Objective

To determine that the applicant can prepare for and conduct a safe, expeditious cross-country flight.

Procedures/Maneuvers

A. Flight Planning

1. Description The applicant may be asked to plan a cross-country flight to a point at least 2 hours away at the cruising speed of the airship used. Planning should include the obtaining of pertinent and available weather information; plotting the course on an aeronautical chart; selecting checkpoints; measuring distances; and computing flight

time, headings, and fuel requirements. The Airman's Information Manual should be used as a reference for airport information, NOTAMS, and such other appropriate guidance as may be extracted from its contents.

2. Acceptable Performance Guidelines All flight planning operations shall be meaningful, accurate, and applicable to the trip proposed. The applicant shall explain his plan for the flight, verify his calculations, and present his sources of information and data.

B. Conduct of Planned Flight

1. Description The applicant may be asked to perform the planned flight using pilotage, dead reckoning, and VOR or ADF radio aids as appropriate to the equipment in the airship. He should make good the desired track, determine position by reference to landmarks, and calculate estimated times of arrival over checkpoints. He may also be asked to intercept and follow a VOR radial, or an NDB bearing using ADF, recognize station passage, and determine position by means of cross bearings. (The applicant will not be asked to perform these VOR and ADF procedures if he has shown competency in them on a previous FAA flight test.)

The applicant should set out on the cross-country flight which he had planned before takeoff. The planned course should be fol-

lowed at least until the applicant establishes the compass heading necessary to stay on course, and can give a reasonable estimate of his groundspeed and time of arrival at his first point of intended landing.

2. *Acceptable Performance Guidelines* The applicant shall: (1) establish and maintain headings required to stay on course; (2) correctly identify position; (3) provide reasonable estimates of times of arrival over checkpoints and destination with an apparent error of not more than 10 minutes; and (4) maintain altitude within ±200 ft. of the selected cruising altitude.

C. Diversion to an Alternate

1. Description When requested by the examiner to divert to an alternate airport, as might be necessary to avoid adverse weather, the applicant is expected to determine the new course. This may be accomplished by means of pilotage, dead reckoning, or radio navigation aids.

2. *Acceptable Performance Guidelines* The applicant shall take prompt action to avoid the announced hazard and either proceed toward the alternate or land at a suitable area and plot the new course. He shall compute, within a reasonable time, a new heading and estimate the flying time and required fuel to reach the alternate.

VII. EMERGENCY OPERATIONS

Objective

To determine that the applicant can react promptly and correctly to emergencies which may occur during flight.

Procedures/Maneuvers

A. Partial or Complete Loss of Power

1. Description The applicant may be asked to demonstrate his knowledge of corrective action for: (1) partial loss of power; (2) complete loss of power; (3) rough engine; (4) carburetor ice; (5) fuel starvation; and (6) engine or nacelle fire inflight. The examiner may, with no advance warning, reduce power to simulate engine malfunction.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's prompt analysis of the situation and on his remedial course of action. He shall perform the emergency procedures in compliance with the manufacturer's published recommendations. Any action which creates unnecessary additional hazards shall be disqualifying.

B. Free Ballooning (Ballast Control and Valving of Gas)

1. Description The applicant may be asked to demonstrate free ballooning as an emergency means of controlling the airship to a safe landing in the event both engines

should fail. The examiner may, with no advance warning, reduce power on both engines to simulate failure. The applicant will be expected to bring the airship to an equilibrium condition as soon as possible after the cessation of powered flight. He will also be expected to select a suitable landing site and demonstrate that he can establish an acceptable rate of descent, minimizing ballast dumping and helium valving.

2. *Acceptable Performance Guidelines* Performance shall be evaluated on the applicant's prompt analysis of the situation and on his remedial course of action. He shall perform the emergency procedures in compliance with the manufacturer's published recommendations. Any action which creates unnecessary additional hazards shall be disqualifying.

C. Emergency Use of Ripcord

1. Description The applicant may be asked to demonstrate his knowledge of the use of the ripcord in an emergency situation. The examiner may orally quiz the applicant on the manufacturer's approved ripping procedures.

2. *Acceptable Performance Guidelines* The applicant shall be evaluated on the thoroughness of his knowledge of when the ripcord should be used and the proper ripping procedure to be used.

D. Systems or Equipment Malfunctions

1. Description The applicant may be asked to demonstrate his knowledge of corrective action for: (1) electrical system emergencies; (2) fuel system emergencies; (3) propeller emergencies; (4) control system emergencies; and (5) envelope emergencies. When practicable, the examiner may, with no advance warning, simulate or state that a selected emergency exists. The applicant will be expected to perform, or explain, the emergency procedures for the simulated malfunction.

2. Acceptable Performance Guidelines Performance shall be evaluated on the applicant's prompt analysis of the situation and his remedial course of action. He shall perform the emergency procedures in compliance with the manufacturer's published recommendations. Any action which creates unnecessary additional hazards shall be disqualifying.

VIII. MANEUVERING BY REFERENCE TO INSTRUMENTS (COMMERCIAL)

Objective

To determine that the applicant can safely and accurately maneuver the airship in instrument conditions.

Procedures/Maneuvers

A. Straight-And-Level Flight

1. Description The applicant may be asked to demonstrate his ability to control the airship solely by reference to flight instruments while performing straight-and-level flight.

2. Acceptable Performance Guidelines The applicant's performance shall be evaluated on his ability to (1) maintain altitude, heading, and airspeed with a minimum of pitching and yawing; (2) adjust and maintain the trim of the airship for maximum controllability; (3) use the controls in a smooth, well coordinated manner. Deviation of ± 100 ft. from the selected altitude shall be considered disqualifying unless corrected promptly.

B. Turns

1. Description The applicant may be asked to demonstrate his ability to control and maneuver the airship solely by reference to flight instruments while performing left and right turns.

2. Acceptable Performance Guidelines The applicant's performance shall be evaluated on his (1) coordination; (2) alertness; (3) rudder technique in controlling the rate of turn; and (4) ability to anticipate the need for elevator control to counteract the elevator effect produced by the rudder while

turning. Deviation of ±100 ft. from the selected altitude shall be considered disqualifying unless corrected promptly.

C. Climbs and Descents

1. Description The applicant may be asked to demonstrate his ability to control and maneuver the airship solely by reference to flight instruments while performing ascents and descents at the rate of 500 ft. per minute.

2. Acceptable Performance Guidelines The applicant's performance shall be evaluated on his (1) ability to have the airship in static equilibrium or nearly so, when practicable; (2) understanding of the air system and its limitations for trimming procedure, coordination, and smooth change in the airship attitude; (3) ability to control rate of ascent or descent to arrive at the assigned altitude within ±10 seconds of his estimate; (4) ability to maintain airspeed within ±10 mph of the assigned speed; (5) ability to control envelope gas pressure at acceptable inches of water during ascents and descents; and (6) ability to return the airship to straight-and-level flight at the selected altitude.

D. Precision Turns

1. Description The applicant may be asked to demonstrate his ability to control and maneuver the airship solely by reference to flight instruments while performing precision

standard rate turns (right and left) of 180° and 360°.

2. *Acceptable Performance Guidelines* The applicant's performance shall be evaluated on his (1) coordination; (2) alertness; (3) technique in controlling the rate of turn; (4) ability to stop the turns on predetermined headings within ±10° for 180° turns and within ±20° for 360° turns; (5) ability to maintain airspeed within ±10 mph of selected speed; and (6) ability to maintain a selected altitude within ±100 ft.

IX. PREPARING AND FILING IFR FLIGHT PLANS, AND COMPLYING WITH IFR CLEARANCES (COMMERCIAL)

Objective

To determine that the applicant can develop and file a functional plan of action for an IFR flight and abide by appropriate clearances within the National Airspace System.

Procedures/Maneuvers

A. Preparing and Filing an Instrument Flight Plan

1. Description The applicant may be asked to prepare, and submit for the examiner's review, an instrument flight plan for a 2-hour IFR cross-country flight (see Flight Planning Procedures of Operation, VI) based on a prepared flight log and information con-

tained in the *Airman's Information Manual, Enroute Charts, Instrument Approach Procedure Charts,* and other appropriate sources of information. This includes facilities for all departures and arrivals.

2. *Acceptable Performance Guidelines* The applicant's performance shall be evaluated on the accuracy of the flight plan developed, and his knowledge of procedures for filing it with ATC.

B. Complying With IFR Clearances

1. Description The applicant may be asked to demonstrate that he can accept actual or simulated ATC IFR clearances correctly, and that he can comply accurately with ATC instructions and procedures.

2. *Acceptable Performance Guidelines* The applicant's performance shall be evaluated on the basis of the accuracy of his compliance with IFR clearance and ATC instructions, his acceptance and acknowledgement of instructions, and his familiarity and compliance with standard ATC procedures.

X. IFR RADIO NAVIGATION (COMMERCIAL)

Objective

To determine that the applicant can safely and efficiently navigate in instrument conditions in the National Airspace System in compliance with Instrument Flight Rules and ATC clearances and instructions.

Procedures/Maneuvers

A. VOR Navigation

1. Description The applicant may be asked to demonstrate:

a. Intercepting a VOR radial at a predetermined angle.

b. Tracking on a selected VOR radial.

c. Determining position using intersecting radials.

2. Acceptable Performance Guidelines The applicant's performance shall be evaluated on his accuracy in determining his position by means of cross bearings, his interception procedures, and his ability to maintain orientation and the assigned flight path.

B. ADF Navigation

1. Description The applicant may be asked to use ADF for homing, intercepting, and tracking predetermined radio bearings to and from nondirectional beacons, and for determining position by use of cross bearings.

2. Acceptable Performance Guidelines The applicant's performance shall be evaluated on his accuracy in determining his position by means of cross bearings, his interception procedures, and his ability to maintain orientation and the assigned track.

C. Navigation by ATC Instructions

1. Description The applicant may be asked to show that he can comply with ATC

instructions and procedures. This includes navigation by adherence to radar vectors and specific instructions for headings and altitude changes.

2. *Acceptable Performance Guidelines* Evaluation of the applicant's performance shall be based on his promptness and accuracy in responding to and complying with ATC navigation instructions.

XI. INSTRUMENT APPROACHES (COMMERCIAL)

Objective

To determine that the applicant can execute safe and accurate instrument approaches to published minimums under instrument conditions.

Procedures/Maneuvers

A. VOR Approach

1. *Description* The applicant may be requested to demonstrate a published VOR approach procedure.

2. *Acceptable Performance Guidelines* The applicant shall descend at the proper rate to the MDA so as to arrive at a position from which a normal landing approach can be made, straight-in or circling, as appropriate. Deviations of more than ± 10 mph from the desired approach speed shall

be disqualifying. Errors in altitude of more than 100 ft. below prescribed altitudes during the initial approach or descending below the MDA prior to the examiner reporting the runway environment in sight, shall be disqualifying. If a circling approach is made, exceeding the radius of turn dictated by published visibility minimums or descending below the MDA prior to reaching a position from which a normal approach to the landing runway can be made, shall also be disqualifying.

B. ILS Approach

1. Description The applicant may be requested to demonstrate a published ILS approach procedure.

2. Acceptable Performance Guidelines As directed by the examiner, the applicant shall descend on a straight-in approach to the DH, or on a circling approach to the MDA, arriving at a position from which a normal landing approach can be made straight-in or circling, as appropriate. Deviations of more than ± 10 mph from the desired approach speed shall be disqualifying. Errors in altitude of more than 100 ft. below prescribed altitudes during the initial approach, full scale deflection of the CDI or the glide slope indicator after glide slope interception, or descending below the DH or MDA prior to the examiner reporting the runway environ-

ment in sight, shall be disqualifying. If a circling approach is made, exceeding the radius of turn dictated by published visibility minimums or descending below the MDA prior to reaching a position from which a normal approach to the landing runway can be made shall also be disqualifying.

C. Localizer Approach

1. Description The applicant may be requested to demonstrate a published localizer approach, or an ILS (Back Course) approach procedure.

2. Acceptable Performance Guidelines The applicant shall descend at the proper rate to the MDA so as to arrive at a position from which a normal landing approach can be made, straight-in or circling, as appropriate. Deviations of more than ± 10 mph from the desired approach speed shall be disqualifying. Errors in altitude of more than 100 ft. below prescribed altitudes during the initial approach, full scale deflection of the CDI, or descending below the MDA prior to the examiner reporting the runway environment in sight, shall be disqualifying. If a circling approach is made, exceeding the radius of turn dictated by published visibility minimums or descending below the MDA prior to reaching a position from which a normal approach to the landing runway can be made, shall also be disqualifying.

D. ADF Approach

1. Description The applicant may be requested to demonstrate an ADF approach using a published NDB (non-directional beacon) approach procedure.

2. Acceptable Performance Guidelines The applicant shall descend at the proper rate to the MDA so as to arrive at a position from which a normal landing approach can be made, straight-in or circling, as appropriate. Deviations of more than ±10 mph from the desired approach speed shall be disqualifying. Errors in altitude of more than 100 ft. below prescribed altitudes during the initial approach, or descending below the MDA prior to the examiner reporting the runway environment in sight, shall be disqualifying. If a circling approach is made, exceeding the radius of turn dictated by published visibility minimums or descending below the MDA prior to reaching a position from which a normal approach to the landing runway can be made, shall also be disqualifying.

XII. EMERGENCIES IFR (COMMERCIAL)

Objective

To determine that the applicant can promptly recognize and take appropriate action for abnormal or emergency conditions and malfunctions while in instrument conditions.

Procedures/Maneuvers

A. Loss of Radio Communications

1. Description The examiner may simulate loss of radio communications. The applicant should know the actions required pertaining to altitudes, routes, holding procedures, and approaches.

2. Acceptable Performance Guidelines Evaluation shall be based on the applicant's knowledge of, and compliance with, the pertinent procedures required by Part 91 of the *Federal Aviation Regulations* and the emergency procedures outlined in the *Airman's Information Manual.* An explanation or simulation of the proper procedures for loss of radio communications is acceptable.

B. ASR (Airport Surveillance Radar) Approach

1. Description The applicant may be requested to demonstrate an ASR approach procedure as directed by ATC or simulated by the examiner to the published straight-in or circling MDA.

2. Acceptable Performance Guidelines The applicant shall descend at the proper rate to the MDA so as to arrive at a position from which a normal landing approach can be made, straight-in or circling, as appropriate. Deviations of more than ± 10 mph from the desired approach speed shall

47

be disqualifying. Errors in altitude of more than 100 ft. below prescribed altitudes during the initial approach, or descending below the MDA prior to the examiner reporting the runway environment in sight, shall be disqualifying. If a circling approach is made, exceeding the radius of turn dictated by published visibility minimums or descending below the MDA prior to reaching a position from which a normal approach to the landing runway can be made, shall also be disqualifying.

C. Recovery from Unusual Attitudes

1. Description The examiner may place the airship in unusual flight attitudes which may result from lapse of attention or abnormal trim condition. The applicant should recover and return the airship to the original attitude, altitude, and heading. For this demonstration, the examiner may simulate malfunctions in one or more flight instruments.

2. Acceptable Performance Guidelines Evaluation shall be based on the promptness, smoothness, and accuracy demonstrated. All maneuvering shall be conducted within the operating limitations of the airship used. Any action, or lack thereof, which makes it necessary for the examiner to take over to correct the condition or to avoid exceeding any operating limitations of the airship, shall be disqualifying.

D. Equipment or Instrument Malfunctions

1. Description The applicant may be asked to demonstrate his ability to respond to simulated malfunctions of equipment and instruments. Occasionally during the performance of simulated instrument flight maneuvers described elsewhere in this guide, the examiner may simulate a partial or complete loss of flight instruments, navigation instruments, or equipment.

2. Acceptable Performance Guidelines The applicant shall respond to emergency situations in accordance with procedures outlined in the manufacturer's published recommendations. The applicant's performance shall be evaluated on the basis of his competency in maintaining airship control, his knowledge of the emergency procedures, the judgment he displays, and the accuracy of his operations.

E. Missed Approach Procedures

1. Description At any time during an instrument approach, the applicant may be asked to execute the missed approach procedure depicted on the approach chart being used. If the examiner does not specifically ask for the missed approach but he fails to report the runway in sight at the DH or MDA, the applicant should immediately initiate the missed approach procedure as described on the chart, or as directed by ATC.

2. Acceptable Performance Guidelines The evaluation shall be based on the applicant's timely and correct execution of the missed approach procedure.

50